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Attorney Docket No.: 04645.0734

I hereby certify that this paper is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Rachel Watt
Name

Rachel Watt October 5, 2004
Signature Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Number	:	6,783,888 B2
Issued	:	August 31, 2004
Name of Patentee	:	Hong GAN, et al.
Title of Invention	:	CONTROL OF CELL SWELLING BY THE PROPER CHOICE OF CARBON MONOFLUORIDE (CF_x) CATHODE MATERIALS IN HIGH RATE DEFIBRILLATOR CELLS

REQUEST FOR CERTIFICATE OF CORRECTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ATTN: Certificate of Correction Branch

Sir:

Pursuant to 37 C.F.R. 1.322, it is requested that a Certificate of Correction in accordance with the accompanying Form PTO-1050 (3 pages) be issued in connection with the above-identified patent.

The above-identified patent issued with the following errors:

Claim 1, line 14, please delete "material proximate the other major side" and replace it with --material contacting the other major side of the cathode current collector--;

Claim 4, line 3, please delete "size volume percent" and replace it with --size, by volume %--;

Claim 5, line 3, please delete "surface area percent", and replace it with --surface, by area %--;

Claim 16, line 11, please delete "γvalerolactone" and replace it with --γ-valerolactone--;

Claim 16, line 12, please delete "γbutyrolactone, N methyl-pyrrolidinone" and replace it with --γ-butyrolactone, N-methyl-pyrrolidinone--;

Claim 19, line 8, after "contacting", please insert --at least one of--;

Claim 21, please delete the entire claim as printed and replace it with:

--21. A method for powering an implantable medical device, comprising the steps of:

a) providing the medical device;

b) providing an electrochemical cell comprising the steps of:

i) providing an anode of an alkali metal;

ii) providing CFx as a first cathode active material of a first energy density and a first rate capability and providing a second cathode active material of a second energy density and a second rate capability, wherein the first energy density of the CFx is greater than the second energy density while the first rate capability is less than the second rate capability of the second cathode active material;

iii) providing a cathode current collector comprising spaced apart major sides;

iv) positioning the CFx proximate one of the major sides of the cathode current collector;

v) contacting the second cathode active material to the other major side of the

cathode current collector; and

vi) activating the anode and cathode with an electrolyte comprising at least one solvent, wherein the fluorinated carbon is characterized as having been synthesized from a fibrous carbonaceous material having sufficient spacing between graphite layers to substantially restrict expansion due to solvent co-intercalation; and

c) electrically connecting the electrochemical cell to the medical device.--;

Claim 24, line 3, please delete "size volume percent" and replace it with --size, by volume %--; and

Claim 25, line 3, please delete "surface area percent" and replace it with --surface, by area %--.

The errors which appear in the issued patent are PTO mistakes. At claim 16, lines 11 and 12, hyphens are missing. At claims 1, 4, 5, 19, 21, 24 and 25, the PTO did not print the amendments made by the Applicants in the Amendment after final rejection dated September 12, 2003. A Request for Continued Examination was filed on October 24, 2003, entering the previously submitted amendment after final rejection dated September 12, 2003. The amendments made therein to the specification were printed by the PTO. The amendments made therein to the claims (except for the cancellation of claim 15) were not printed by the PTO. A copy of the Amendment dated September 12, 2003, is enclosed herewith.

Accordingly, issuance of the Certificate of Correction is respectfully requested.

It is submitted that no fee is due. However, if the Commissioner finds that any fees are due that are related to this matter, the Commissioner is authorized to deduct the fees from Deposit Account No. 08-2442 of the undersigned.

Patent. No.: 6,783,888 Attorney Docket No.: 04645.0734

If there are any difficulties with this petition, it is requested that the undersigned be contacted at the telephone number indicated below.

Respectfully submitted
HODGSON RUSS LLP
Attorneys for Applicant(s)

By: _____
Rachel S. Watt
Patent Agent
Reg. No. 46,186

HODGSON RUSS LLP
One M&T Plaza, Suite 2000
Buffalo, New York 14203
Tel. (716) 848-4000

Dated: October 5, 2004

Enclosures: Form PTO-1050 (3 pages in duplicate)
Copy of Amendment dated September 12, 2003

PTO/SB/44 (04-04)
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Claim 19, line 8, after "contacting", please insert:
--at least one of--;

MAILING ADDRESS OF SENDER:

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PATENT NO. 6,783,888 B2

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b) providing an electrochemical cell comprising the steps of:

i) providing an anode of an alkali metal;

ii) providing CF_x as a first cathode active material of a first energy density and a first rate capability and providing a second cathode active material of a second energy density and a second rate capability, wherein the first energy density of the CF_x is greater than the second energy density while the first rate capability is less than the second rate capability of the second cathode active material;

iii) providing a cathode current collector comprising spaced apart major sides;

iv) positioning the CF_x proximate one of the major sides of the cathode current collector;

v) contacting the second cathode active material to the other major side of the cathode current collector; and

vi) activating the anode and cathode with an electrolyte comprising at least one solvent, wherein the fluorinated carbon is characterized as having been synthesized from a fibrous carbonaceous material having sufficient spacing between graphite layers to substantially restrict expansion due to solvent co-intercalation; and

c) electrically connecting the electrochemical cell to the medical device.--

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a) providing the medical device;

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i) providing an anode of an alkali metal;

ii) providing CF_x as a first cathode active material of a first energy density and a first rate capability and providing a second cathode active material of a second energy density and a second rate capability, wherein the first energy density of the CF_x is greater than the second energy density while the first rate capability is less than the second rate capability of the second cathode active material;

iii) providing a cathode current collector comprising spaced apart major sides;

iv) positioning the CF_x proximate one of the major sides of the cathode current collector;

v) contacting the second cathode active material to the other major side of the cathode current collector; and

vi) activating the anode and cathode with an electrolyte comprising at least one solvent, wherein the fluorinated carbon is characterized as having been synthesized from a fibrous carbonaceous material having sufficient spacing between graphite layers to substantially restrict expansion due to solvent co-intercalation; and

c) electrically connecting the electrochemical cell to the medical device.--

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I hereby certify that this Correspondence is being forwarded to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on September 12, 2003, via fax phone number 703-872-9311.

Michael F. Scalise
Name

Signature

September 12, 2003
Date of Signature

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	:	Gan et al.
Serial No.	:	09/859,558
Filed	:	May 17, 2001
For	:	Control Of Cell Swelling By The Proper Choice of Carbon Monofluoride (CF_x) Cathode Material In High Rate Defibrillator Cells
Examiner	:	L. Weiner
Group Art Unit	:	1745

Mail Stop Non-Fee Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT UNDER 37 CFR 1.116(a)

Sir:

In response to the Office Action dated July 28, 2003, the Applicants amend and remark as follows:

In the Specification:

The paragraph beginning at page 2, line 2 has been amended as follows:

U.S. Patent No. 6,551,747 to Gan ~~patent application Serial No. 09/560,060, filed April 27, 2000~~, which is assigned to the assignee of the present invention and incorporated herein by reference, describes a sandwiched cathode design for use in a high rate electrochemical cell. The sandwich cathode is composed of a first cathode active material of a relatively high energy density but of a relatively low rate capability, such as CF_x, Ag_2O_2 and even SVO, sandwiched between two layers of current collector. This assembly is, in turn, sandwiched between two layers of a second cathode active material of a relatively high rate capability but of a relatively low energy density, such as SVO, copper silver vanadium oxide (CSVO) and MnO_2. Significantly higher capacities are obtained from lithium cells having sandwich cathode designs of SVO/CF_x/SVO relative to those of lithium cells using only SVO active material in a conventional cathode design. A conventional cathode design has the SVO active material contacted to both sides of an intermediate cathode current collection. In addition, the higher capacity of the present invention cell is achieved without sacrificing the cell's power capability. Therefore, lithium cells constructed with a sandwich cathode electrode design are very good candidates as power sources for cardiac defibrillators and other implantable medical devices requiring a high power cell.

The paragraph beginning at page 10, line 6 has been amended as follows:

The electrochemical cell of the present invention further comprises a cathode of at least a first electrically conductive material that ~~which~~ serves as the other electrode of the cell. The cathode is preferably of solid materials and in one embodiment has a sandwich design as described in the previously referenced U.S. Patent No. 6,551,747 to Gan ~~patent application Serial No. 09/560,060~~. The sandwich cathode design comprises a first active material of a fluorinated carbon compound prepared from the carbonaceous materials described above. Fluorinated carbon is represented by the formula $(CF_x)_n$ wherein x varies between about 0.1 to 1.9 and preferably between about 0.5 and 1.2, and $(C_2F)_n$ wherein the n refers to the number of monomer units which can vary widely.

In the Claims:

1. (Currently Amended) An electrochemical cell, which comprises:

a) an anode;

b) a cathode of a first fluorinated carbon of a first energy density and a first rate capability and a second cathode active material of a second energy density and a second rate capability, wherein the first energy density of the first fluorinated carbon is greater than the second energy density while the first rate capability is less than the second rate capability of the second cathode active material;

c) a cathode current collector comprising spaced apart major sides with the first fluorinated carbon positioned proximate one of the major sides and the second cathode active material ~~proximate~~ contacting the other major side of the cathode current collector; and

d) an electrolyte comprising at least one solvent for activating the anode and the cathode, wherein the fluorinated carbon is characterized as having been synthesized from a fibrous carbonaceous material having sufficient spacing between graphite layers to substantially restrict expansion due to solvent co-intercalation.

2. (Original) The electrochemical cell of claim 1 wherein the cell is dischargeable at a current pulse of at least about 15.0 mA/cm^2

3. (Original) The electrochemical cell of claim 1 wherein the fluorinated carbon synthesized from the fibrous carbonaceous material has a BET surface area of greater than about 250 m^2/g.

4. (Currently Amended) The electrochemical cell of claim 1 wherein the fluorinated carbon synthesized from the fibrous carbonaceous material has a particle size, by volume %, ~~percent~~ of less than about 15 μm.

5. (Currently Amended) The electrochemical cell of claim 1 wherein the fluorinated carbon synthesized from the fibrous carbonaceous material has a particle size surface, by area %, ~~percent~~ of less than about 3.5.

6. (Original) The electrochemical cell of claim 1 wherein the fluorinated carbon synthesized from the fibrous carbonaceous material has a DTA exotherm of about 652°C to about 656°C.

7. (Original) The electrochemical cell of claim 1 wherein the carbonaceous material is selected from the group consisting of carbon fibers with an annual ring layered structure having graphite crystallite edges exposed only on the cross-section, carbon fibers with a radial layered structure having the entire fiber surface with exposed graphite crystallite edges, and mesophase carbon microbeads with a radial-like texture having the entire surface of the microbead with exposed graphite crystallite edges.

8. (Original) The electrochemical cell of claim 1 wherein the second cathode active material is selected from the group consisting of silver vanadium oxide, copper silver vanadium oxide, V_2O_5, MnO_2, $LiCoO_2$, $LiNiO_2$, $LiMnO_2$, CuO, TiS, CuS, FeS, FeS_2, copper vanadium oxide, and mixtures thereof.

9. (Original) The electrochemical cell of claim 1 wherein the cathode has the configuration: SVO/current collector/CF_x/current collector/SVO.

10. (Original) The electrochemical cell of claim 1 wherein the cathode has the configuration: SVO/current collector/SVO/CF_x/SVO/current collector/SVO.

11. (Original) The electrochemical cell of claim 1 wherein the anode is lithium and the cathode has the configuration: SVO/current collector/CF_x, with the SVO facing the lithium anode.

12. (Original) The electrochemical cell of claim 1 wherein the first cathode active material is sandwiched between a first and second current collectors with the second cathode active material contacting the first and second current collectors opposite the first cathode active material.

13. (Original) The electrochemical cell of claim 12 wherein the first and second current collectors are titanium having a coating selected from the group consisting of graphite/carbon material, iridium, iridium oxide and platinum provided thereon.

14. (Original) The electrochemical cell of claim 1 wherein the anode is lithium, the first cathode active material is CF_x, the second cathode active material is SVO and the cathode current collector is titanium or aluminum.

15. (Canceled)

16. (Original) The electrochemical cell of claim 1 wherein the electrolyte has a first solvent selected from an ester, a linear ether, a cyclic ether, a dialkyl carbonate, and mixtures thereof, and a second solvent selected from a cyclic carbonate, a cyclic ester, a cyclic amide, and mixtures thereof.

17. (Original) The electrochemical cell of claim 16 wherein the first solvent is selected from the group consisting of tetrahydrofuran, methyl acetate, diglyme, trigylme, tetragylme, dimethyl carbonate, 1,2-dimethoxyethane, 1,2-diethoxyethane, 1-ethoxy,2-methoxyethane, ethyl methyl carbonate, methyl propyl carbonate, ethyl propyl carbonate, diethyl carbonate, dipropyl carbonate, and mixtures thereof, and the second solvent is selected from the group consisting of propylene carbonate, ethylene carbonate, butylene carbonate,

acetonitrile, dimethyl sulfoxide, dimethyl formamide, dimethyl acetamide, γ-valerolactone, γ-butyrolactone, N-methyl-pyrrolidinone, and mixtures thereof.

18. (Original) The electrochemical cell of claim 1 including a lithium salt selected from the group consisting of $LiPF_6$, $LiBF_4$, $LiAsF_6$, $LiSbF_6$, $LiClO_4$, LiO_2, $LiAlCl_4$, $LiGaCl_4$, $LiC(SO_2CF_3)_3$, $LiN(SO_2CF_3)_2$, LiSCN, LiO_3SCF_3, $LiC_6F_5SO_3$, LiO_2CCF_3, $LiSO_6F$, $LiB(C_6H_5)_4$, $LiCF_3SO_3$, and mixtures thereof.

19. (Original) The electrochemical cell of claim 1 wherein the electrolyte is 0.8M to 1.5M $LiAsF_6$ or $LiPF_6$ dissolved in a 50:50 mixture, by volume, of propylene carbonate and 1,2-dimethoxyethane.

20. (Currently Amended) An electrochemical cell, which comprises:

a) a lithium anode;

b) a cathode of a first cathode active material of CF_x sandwiched between a first and second current collectors with a second cathode active material selected from the group consisting of SVO, CSVO, V_2O_5, MnO_2, $LiCoO_2$, $LiNiO_2$, $LiMnO_2$, CuO_2, TiS, Cu_2S, FeS, FeS_2, CVO, and mixtures thereof, contacting at least one of the first and second current collectors opposite the first cathode active material; and

c) an electrolyte comprising at least one solvent for activating the anode and the cathode, wherein the fluorinated carbon is characterized as having been

synthesized from a fibrous carbonaceous material having sufficient spacing between graphite layers to substantially restrict expansion due to solvent co-intercalation.

21. (Original) The electrochemical cell of claim 20 wherein the current collectors are of titanium.

22. (Currently Amended) A method for powering an implantable medical device, comprising the steps of:

a) providing the medical device;

b) providing an electrochemical cell comprising the steps of:

i) providing an anode of an alkali metal;

ii) providing ~~a cathode of~~ CF_x as a first cathode active material of a first energy density and a first rate capability and providing ~~sandwiched between first and second current collectors with~~ a second cathode active material of a second energy density and a second rate capability, wherein the first energy density of the CF_x is greater than the second energy density while the first rate capability is less than the second rate capability of the second cathode active material; ~~and~~

iii) providing a cathode current collector comprising spaced apart major sides;

iv) positioning the CF_x proximate one of the major sides of the cathode current collector;

v) contacting the second cathode active material to the other major side of the cathode current collector; and

vi) activating the anode and cathode with an electrolyte comprising at least one solvent, wherein the fluorinated carbon is characterized as having been synthesized from a fibrous carbonaceous material having sufficient spacing between graphite layers to substantially restrict expansion due to solvent co-intercalation; and

c) electrically connecting the electrochemical cell to the medical device.

23. (Original) The method of claim 22 including discharging the cell to provide a current pulse of at least about 15.0 mA/cm^2.

24. (Original) The method of claim 22 including providing the fluorinated carbon synthesized from the fibrous carbonaceous material having a BET surface area of greater than about 250 m^2/g.

25. (Currently Amended) The method of claim 22 including providing the fluorinated carbon synthesized from the fibrous carbonaceous material having a particle size, by volume %, ~~percent~~ of less than about 15 μm.

26. (Currently Amended) The method of claim 22 including providing the fluorinated carbon synthesized from the fibrous carbonaceous material having a particle size surface, by area %, ~~percent~~ of less than about 3.5.

27. (Original) The method of claim 22 including providing the fluorinated carbon synthesized from the fibrous carbonaceous material having a DTA exotherm of about 652°C to about 656°C.

28. (Original) The method of claim 22 including selecting the second cathode active material from the group consisting of silver vanadium oxide, copper silver vanadium oxide, V_2O_5, MnO_2, $LiCoO_2$, $LiNiO_2$, $LiMnO_2$, CuO, TiS, CuS, FeS, FeS_2, copper vanadium oxide, and mixtures thereof.

29. (Original) The method of claim 22 wherein the anode is lithium, the first cathode active material is CF_x and the second cathode active material is SVO.

30. (Original) The method of claim 22 including providing the cathode having the configuration: SVO/current collector/CF_x/current collector/SVO.

31. (Original) The method of claim 22 including providing the cathode having the configuration: SVO/current collector/SVO/CF_x/SVO/current collector/SVO.

32. (Original) The method of claim 22 including providing the anode of lithium and the cathode having the configuration: SVO/current collector/CF_x, with the SVO facing the lithium anode.

REMARKS

Claims 1 to 32 are pending. No claims are allowed. Claim 15 is canceled.

1. The Examiner indicates that no Supplemental Information Disclosure Statement was filed containing U.S. Patent No. 5,744,258 to Bai et al. The Applicants respectfully disagree. Enclosed with this amendment is a copy of the supplemental IDS along with a copy of the accompanying post card. The post card is clearly date stamped June 18, 2003, indicating that the U.S. Patent Office did receive the supplemental IDS and the referenced Bai et al. patent.

2. Claims 22 to 32 are rejected under 35 USC 112, second paragraph. The indefinite language noted in independent claim 22 has been amended. Claims 23 to 33 are believed to be allowable as hinging from a patentable base claim.

Reconsideration of this rejection is requested.

3. Claims 1 to 32 are rejected under 35 USC 103(a) as being unpatentable over Gan (U.S. Patent No. 5,661,747) in view of Endo. (EP 58-223264, abstract). A Declaration Under 37 CFR 1.131 is included with this amendment. The declaration includes a copy of a patent disclosure evidencing that the inventors of the present application had conceived and reduced their invention to practice prior to the effective date of the Gan reference. Therefore, Gan

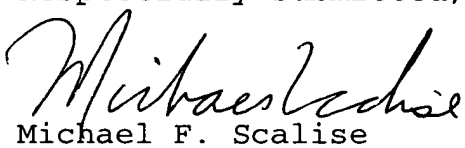
is not a proper obviating reference in combination with Endo.

Accordingly, it is believed that independent claims 1, 20, and 22 are patentable over Gan in view of Endo. Claims 2 to 14, 16 to 19, 21 and 23 to 32 are allowable as hinging from patentable base claims.

Reconsideration of this rejection is requested.

It is believed that claims 1 to 14 and 16 to 32 are now in condition for allowance. Notice of Allowance is requested.

Respectfully submitted,



Michael F. Scalise
Reg. No. 34,920

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September 12, 2003